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UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

ORACLE AMERICA, INC.

Plaintiff,

v.

GOOGLE INC.

Defendant.

Case No. CV 10-03561 WHA

**ORACLE AMERICA, INC.'S
OPPOSITION TO GOOGLE'S
MOTION IN LIMINE NO. 2 TO
EXCLUDE ALLEGED
PERFORMANCE BENEFITS OF
ANDROID WITH THE ACCUSED
FUNCTIONALITY**

Dept.: Courtroom 8, 19th Floor
Judge: Honorable William H. Alsup

INTRODUCTION

It is indisputable that performance is crucial to the commercial success and adoption of Android. Google devotes an entire section of its Android website discussing performance optimizations (*see, e.g.*, Agrawal Decl. Ex. 2-1); it publicly touts Android performance highlights in another section (*see, e.g., id.* Ex. 2-2); and it understands that performance is of utmost importance to the success of Android (*see, e.g., id.* Ex. 2-3, GOOGLE-04-00055098 (“if the device is not fast and stable we FAIL”); Ex. 2-4 (Morrill Dep. 168:22-169:23 (Android engineer testified that “In other words, the device’s poor performance would reflect -- in the user’s eyes”))).)

Based on Google’s own evidence, Prof. Mitchell described how Google’s inclusion of the claimed inventions of five patents-in-suit in Android was performance-motivated, citing to a 2008 Google I/O presentation entitled “Dalvik Virtual Machine Internals” by Dan Bornstein. (Agrawal Decl. Ex. 2-5 (Mitchell Patent Infringement Report) ¶ 83.) To evaluate the performance impact of the claimed inventions of the patents-in-suit on Android, Prof. Mitchell asked that Android’s performance be tested. (*Id.* ¶ 6.) Prof. Mitchell worked with Java engineers Bob Vandette, Noel Poore, Erez Landau, Peter Kessler, and Seeon Birger to figure out how to conduct performance tests to measure the benefit the patented technology confers on Android. (*Id.* ¶¶ 6, 39-67); Agrawal Decl. Ex. 2-6 (Mitchell Patent Dep. 80:6-9, 81:8-15).)

Bob Vandette, Noel Poore, and Erez Landau are qualified engineers with years of experience conducting performance analyses of Java technologies. (Agrawal Decl. Ex. 2-7 (Summary and Report of Robert G. Vandette (“Vandette Report”) ¶ 11); Ex. 2-8 (Summary and Report of Noel Poore (“Poore Report”) ¶ 11); Ex. 2-9 (Summary and Report of Erez Landau (“Landau Report”) ¶¶ 9, 11).) Prof. Mitchell, who had determined which portions of the Android source code were responsible for Google’s infringement and described his analysis in a 387-page report and in claim charts spanning 464 pages, advised the engineers about what source code modifications would be needed to disable Android’s infringing functionality. (Agrawal Decl. Ex. 2-5 (Mitchell Patent Infringement Report ¶¶ 40, 52, 60).) The engineers then modified Android in the manner directed by Prof. Mitchell and compared the performance of the

1 unmodified, infringing Android to the modified Android, occasionally enlisting help from
 2 colleagues with whom they normally work in the ordinary course of their performance analysis
 3 work. (*See, e.g., id.* Ex. 2-10 (Landau Dep. 108:13-109:10).) The engineers conducted the
 4 Android performance testing just like they conduct Java performance testing:

5 Q. Speaking more generally about the tests that you and your team ran, would
 6 you say that the tests that are described in your report and you've testified about
 7 today, are they representative of the kind of performance testing that you and your
 8 team members do in your everyday work?

9 A. Yes. This is a typical scenario of work that we are doing.

10 Q. Okay. And when you do your work, do you normally rely on your colleagues
 11 like Seeon to help you do your work?

12 A. I assist a lot of and -- I am being assisted a lot with hands-on work with other
 13 of the -- I'm supervising quite multiple projects.

14 Q. Is there anything about the projects that you did in your analysis of Android
 15 that you would say is not typical of the kinds of testing you do in the Java
 16 environment?

17 A. No. We use normal methods that -- normal procedure.

18 (*Id.*)

19 As Mr. Landau explained in his deposition, Seeon Birger assisted him. In this instance,
 20 the work that Mr. Birger performed was that of a technician under Mr. Landau's direction;
 21 Mr. Birger made no decision as to what Android functionality should be disabled or how it should
 22 be disabled, and Mr. Birger did not offer any evaluation of any test results. ***For a completely***
 23 ***different task***, Mr. Birger also assisted in making Android builds that could be loaded onto Nexus
 24 One Android devices for testing purposes by other experts; but here again, Mr. Birger performed
 25 routine tasks rather expert analysis.¹ (Birger Summary of Investigation for Damages Expert
 26 ("Birger Summary") ¶ 11.) Mr. Birger described his later work in a summary that was served
 27 with Oracle's damages report; the work described in Mr. Birger's summary was ***not*** the
 28 foundation of the Vandette, Poore, and Landau reports. (*See, e.g., Poore Report* ¶ 25; Agrawal
 Decl. Ex. 2-12 (Poore Dep. 24:6-9).) Google is mistaken when it argues otherwise. (Google's

¹ There are no contradictions about who did what, contrary to Google's argument. (Google's MIL #2 at 3.) What the engineers testified they did, they did. And there was no cause to depose Mr. Birger because he is not a testifying expert and fact discovery had closed.

MIL #2 at 3.) Prof. Kemerer took the unmodified and modified Android builds and had them installed on Nexus One smartphones, and then ran the Linpack performance benchmark on each one. (See Kemerer Decl ¶ 8.) Linpack is a benchmark that Google itself uses to boast about Android performance gains. (Agrawal Decl. Ex. 2-2.) Oracle's damages expert Prof. Cockburn used these test results in his damages analyses.

The performance tests that Oracle's experts conducted followed this methodology:

- (1) download and build Android source code following the instructions that Google makes available to the public via <http://source.android.com/source/index.html> (Landau Report ¶ 20; Vandette Report ¶¶ 13, 22; Poore Report ¶¶ 13, 55);
- (2) keep an unmodified version of a particular Android release (Froyo 2.2) to serve as a basis for comparison (Landau Report ¶ 25; Poore Report ¶¶ 13, 55; Vandette Report ¶¶ 13, 56);
- (3) disable the accused functionality in a copy of the same version of Android (Landau Report ¶ 26; Poore Report ¶¶ 15-17, 57; Vandette Report ¶ 13);
- (4) select a hardware test platform that supported Android (such as Google's Android emulator, test devices like the Beagleboard or Tegra board, or Android phone like the Nexus One) (Landau Report ¶¶ 30-31; Poore Report ¶ 39; Vandette Report ¶ 19);
- (5) run and repeat tests on a device running the unmodified version of Android (Landau Report ¶¶ 30-31; Poore Report ¶¶ 15-17, 57; Vandette Report ¶ 47);
- (6) run and repeat the same tests on the same or duplicative device running the modified version of Android. (Landau Report ¶¶ 30-31; Poore Report ¶¶ 15-17, 57; Vandette Report ¶ 47); and
- (7) report on the results.

Google does not dispute that this was the methodology the performance experts employed. (Google's MIL #2 at 1-2.) Each performance expert explained his work in a report or statement submitted to Google, attached the applications or benchmarks that were used as tests, attached the source code modifications, and attached the results, favorable or not.

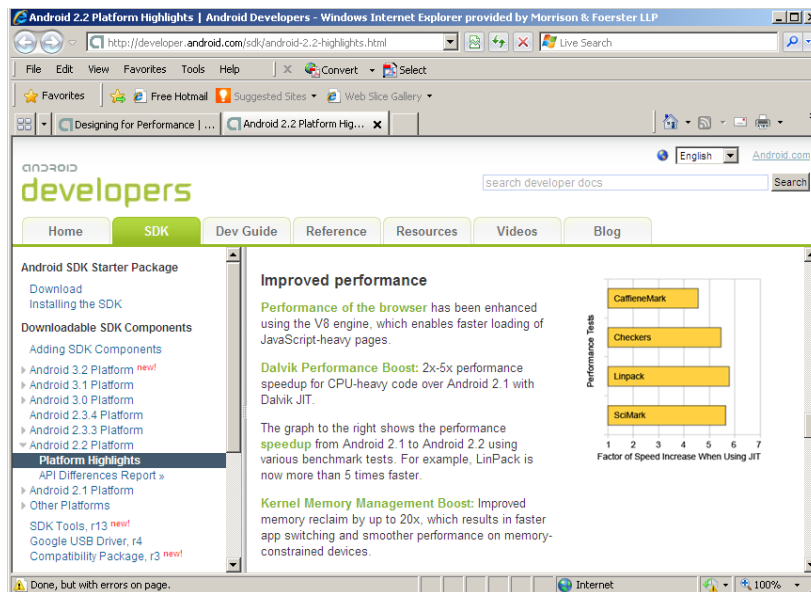
What the performance test results showed was astounding:

- Android's use of the '104 patent's claimed invention resulted in as much as 13X execution speed improvement;
- Android's use of the '205 patent's claimed invention resulted in as much as 3.3X execution speed improvement;
- Android's use of the '702 patent's claimed invention resulted in as much as 3.3X .dex file size improvement; and

- The '720 patent's claimed invention resulted in as much as 40% memory savings and also a 0.10 second savings per application launch time.

(Agrawal Decl. Ex. 2-5 (Mitchell Patent Infringement Report ¶¶ 41, 48, 53, 61).) The test results for the '520 patent depended on the nature of the application being tested. (Poore Report ¶¶ 73-78.) The '447 and '476 patents were not tested.

The benchmarks the performance experts used are the same as those that Google itself uses to evaluate Android's performance. Google's webpage (*id.* Ex. 2-2) highlights the "Dalvik Performance Boost" achieved by using JIT technology that infringes the '205 patent:



Notably, **three of the four** benchmarks Google identifies on its own webpage – CaffeineMark, Linpack, and SciMark – were used by Oracle's performance experts to assess the performance impact of the claimed inventions of the patents-in-suit that Google now attempts to exclude. (*See, e.g.,* Vandette Report ¶ 16 (CaffeineMark and SciMark); Kemerer Decl. ¶ 8 (Linpack).) Moreover, the performance tests, results, and interpretation were consistent with ones Google's own engineers reported (*see, e.g., id.* Ex. 2-13 (reporting on "2x to 5x" performance improvements due to JIT technology that is accused of infringing the '205 patent).) Other examples include:

- Mr. Vandette conducted performance tests on a Tegra board (Vandette Report ¶ 19); Google itself has used Tegra boards to analyze Android performance (*see, e.g.,* Agrawal Decl. Ex. 2-14, GOOGLE-02-00465974 (Android execution speed performance discussion concerning "producing the numbers on our Tegra board"));

- Oracle's performance experts compared virtual machine performance against virtual machine performance and measured the differences, regardless of which platform they used to conduct the tests (Landau Report ¶¶ 30-31; Vandette Report ¶¶ 37-38; Poore Report ¶¶ 70-72); this is what Google itself does (Agrawal Decl. Ex. 2-14, GOOGLE-02-00465974 (Android engineer commenting that "I would like to track performance consistently between the two JVM"); Ex. 2-15, GOOGLE-06-00238120 (examining results from a specific micro benchmark measuring Android memory performance); Ex. 2-16, GOOGLE-04-00083077 (Android engineers commenting that "We consistently beat [Oracle] on CaffeineMark's Strings test. I think that's the one we cheated on."); and
- Mr. Landau and Prof. Kemerer conducted performance tests on the Nexus One Android device (Landau Report ¶¶ 30-31; Kemerer Decl. ¶ 8); Google identified the Nexus One as "a good choice both for people who want to build Android applications using either the SDK or the NDK, and those who want to experiment with modified versions of the Android platform." (See Agrawal Decl. Ex. 2-17.)

ARGUMENT

Oracle's experts, having years of performance testing experience, tested Android in the same way that they test Oracle software for customers, using the same tests and hardware setups that Google uses. Their work passes the reliability test of *Daubert* and Rule 702. Tellingly, Google has not offered the declaration of anyone experienced in performance testing to support its motion—instead Google provides unsupported attorney argument. Google engineers could have repeated Oracle's testing to see if they got different results, but they did not. Google engineers could have performed the different tests that Google's counsel argues should have been done, to see if they got different results, but they did not. The ineluctable conclusion is that Google either did that testing, and found the same results as Oracle, or did not do the testing because it did not want to know the answer. Google has no excuse for not doing its own performance testing. Pursuant to the Court's Case Management Order, Oracle timely disclosed on July 1, 2011 that it would offer expert testimony related to "performance benchmark tests, results, and analysis demonstrating the significance of the patents-in-suit to Android and the Java platform with respect to execution speed, memory savings, and architectural impact," and timely disclosed the results of that testing in expert reports pursuant to Fed. R. Civ. P. 26(a)(2)(C).

Oracle's performance tests meet not only Rule 702 but also Rules 401 and 402. They are relevant to liability because they show that the accused methods are performed when Android runs, they show how Google's instructions to its licensees induce infringement, they show that Google's licensees are unlikely to make modifications to the Android source code that Google

1 distributes because of the performance consequences, and they show Google's motivation for
 2 including Oracle's patented technologies in Android. They are relevant to damages as well, not
 3 only because they show the value of the patented inventions, but also because they inform Prof.
 4 Cockburn's econometric and conjoint analyses. Oracle's performance tests satisfy Rule 403 as
 5 well—no *unfair* prejudice arises from proof of exactly how valuable infringement is to Google.

6 Google pursues this motion *in limine* precisely because the performance testing evidence
 7 is so powerful. Google offers a host of criticisms of Oracle's performance testing. None
 8 establish that the testimony is unreliable. Google's criticisms go only to weight, not
 9 admissibility. Rather than exclusion, cross-examination of Oracle's witnesses is appropriate
 10 means for Google to address its complaints.

11 **I. GOOGLE FAILS TO MEET THE THRESHOLD FOR EXCLUSION OF** 12 **EXPERT EVIDENCE AND TESTIMONY**

13 The question for the Court is whether Oracle's performance testing was reliable enough to
 14 be admissible. Prof. Mitchell and the performance experts are eminently qualified to have
 15 performed the work, and Google does not argue otherwise. Thus, the sole issue for this motion is
 16 whether the reasoning and methods underlying the performance tests are reliable, and whether
 17 they have been properly applied to the facts, pursuant to Rule 702. They have. Google's
 18 attorney-argument-based criticisms do not establish that Oracle's methodology was fatally
 19 flawed. *Gutierrez v. Wells Fargo & Co.*, No. C 07-05923 WHA, 2010 WL 1233810, at *11
 20 (N.D. Cal. Mar. 26, 2010) ("[T]he rules of evidence do not demand perfection. Rather, a court
 21 need only determine whether the reasoning and methods underlying the expert testimony are
 22 reliable, and whether they have been properly applied to the facts."). Google's motion should be
 23 denied.

24 **A. Oracle's Performance Testing Satisfies Each *Daubert* Factor.**

25 **1. The Performance Tests and Results Are Based Upon Sufficient** 26 **Facts and Data**

27 Oracle's performance experts started by downloading and building Android source code
 28 following Google's own instructions. (See Landau Report ¶¶ 22, 23; Vandette Report ¶¶ 13, 22;
 Poore Report ¶¶ 13, 55.) They used hardware platforms that were either supported by Android or

1 had Android distributions. (*See, e.g.*, Vandette Report ¶¶ 20-21.) The benchmarks used to test
 2 Android performance were “industry accepted benchmarks” (*see, e.g., id.* ¶¶ 15-16) that Google
 3 itself adopted. In some cases, “[t]he benchmarks used to test the performance of the workspaces
 4 were all Google standard applications available in the repository.” (Landau Report ¶ 29.) The
 5 experiments comprising the performance benchmark testing were repeated several times, (*see,*
 6 *e.g.*, Poore Report ¶¶ 25, 27), and were consistent with Google’s own touted benchmark results.
 7 Thus, the performance tests and results are based upon sufficient facts and data.

8 Google challenges the performance reports on the grounds that Prof. Mitchell did not
 9 actually conduct the tests himself; likewise, Google takes issue with Vandette and Landau
 10 receiving assistance in conducting performance tests. But “an expert need not have obtained the
 11 basis for his opinion from personal perception.” *Monsanto Co. v. David*, 516 F.3d 1009, 1015
 12 (Fed. Cir. 2008). An expert may instruct others on how to conduct the testing.

13 **2. The Performance Tests and Results are the Product of Reliable** 14 **Principles and Methods**

15 Oracle’s performance experts used reliable principles and methods in conducting the
 16 performance testing. In *Daubert*, the Court held that “[w]idespread acceptance can be an
 17 important factor in ruling particular evidence admissible.” *Daubert v. Merrell Dow Pharms.,*
 18 *Inc.*, 509 U.S. 579, 594 (1993). In this case, the performance tests are the product of the “widely
 19 accepted industry practice to use performance benchmark analysis for the purpose of evaluating
 20 the relative value of one product over another.” (Vandette Report ¶ 12.) In his report,
 21 Mr. Vandette discusses that performance benchmark analysis is used in the computer science
 22 industry and provides examples of some accepted industry benchmarks. (*Id.* ¶¶ 12-15.) This
 23 widespread acceptance of performance benchmark testing weighs in favor of admissibility,
 24 demonstrating that performance benchmark analysis is an accepted and reliable methodology.
 25 *See Daubert*, 509 U.S. at 594.

26 Oracle’s performance experts adopted performance measurement techniques and
 27 interpretations that Google itself has used to evaluate Android’s performance, *supra*. Google’s
 28 argument that Oracle’s experts offered “no recognized methodology guiding their modifications

of the Android source code” is nonsense. (Google’s MIL #2 at 4.) **Disabling** a software feature by editing the source code and comparing its performance to the original code using standard benchmarks is not any different from **adding** a software feature by editing the source code and comparing its performance to the original code using standard benchmarks, which is what Oracle’s performance experts do every day. (See Vandette Report ¶ 12 (Benchmarks used in testing “are written to allow quick and repeatable measurements of a function or set of functions that a platform or product might implement.”).)

Oracle’s performance experts selected benchmarks “that did not require any Java graphical APIs and could run on the APIs that are implemented in Android.” (*Id.* ¶ 16.) Oracle’s experts conducted the performance analysis in such way as to “also allow Google to validate these benchmark tests if they choose to.” (*Id.* ¶¶ 20, 21.) Thus Oracle’s performance tests are based on reliable methodology. (*Id.* ¶¶ 5-20.)

At trial, Prof. Mitchell and Oracle’s performance experts will testify about why the modifications made were reasonable and reliable to measure the impact of the claimed inventions of the patents-in-suit. Here are some reasons why the Android test modifications were reasonable and reliable, in specific response to Google’s criticisms (Google’s MIL #2 at 4):

- ’104 patent test: Mr. Vandette disabled Android’s JIT feature in **both** the unmodified and modified test code to test the impact of the claimed invention of the ’104 patent. (Agrawal Decl. Ex. 2-11 (Vandette Dep. 84:21-85:8); Vandette Report ¶¶ 36-39.) Because Android’s JIT feature depends on the ’104 patented technology, Mr. Vandette had no choice but to turn off the JIT feature. (Agrawal Decl. Ex. 2-11 (Vandette Dep. 84:21-85:8).) In doing so, Mr. Vandette compared apples to apples and reported on the differences in execution speed.
- ’205 patent test: Oracle accuses Android’s JIT feature of infringing the ’205 patent. As Mr. Vandette testified, Android’s JIT feature necessarily relies on Android’s JIT compiler; and so turning off the JIT compiler was sufficient to turn off Android’s JIT without affecting other Android features. (Agrawal Decl. Ex. 2-11 (Vandette Dep. 100:9-17).)
- ’702 patent test: Mr. Poore used three different methodologies to estimate the effect of the use of the ’702 invention on the size of Android’s Dalvik executable file (dex file). (Poore Report ¶¶ 15-17.) Mr. Poore’s analysis consistently showed that a dex file would be larger without benefit of the claimed invention. Using multiple methodologies to confirm results is generally considered good science. In **one** of three methodologies, Mr. Poore explained how it created larger entries, but also explained how he subtracted out the additional size to get an accurate result. (*Id.* ¶ 20.)
- ’520 patent test: Apparently less significant to Google, Google offers no explicit criticism of Mr. Poore’s ’520 performance tests. To be clear, Mr. Poore turned off the ’520 patent

1 by setting an environment variable NO_ARRAY_OPT, which precisely maps to turning
2 off the patented feature of the '520 patent. (*Id.* ¶¶ 59-61.)

- 3 • '720 patent test: The '720 patent necessarily relies on a feature called copy-on-write; and
4 so turning off Android's copy-on-write feature was sufficient to turn off Android's use of
the '720 patent to measure its performance impact. (Landau Report ¶ 27; Agrawal Decl.
Ex. 2-10 (Landau Dep. 46:2-47:8).)

5 Oracle's performance experts did the exact opposite of what Google accuses them of – they
6 applied careful reasoning to determine how to modify Android source code to fairly reflect
7 disablement of the claimed inventions in order to measure their performance impact. Notably,
8 Google's damages expert Gregory Leonard contends that disabling the inventions is an alternative
9 to infringement. Lastly, Prof. Mitchell answered Google's criticisms in his Reply Patent
10 Infringement Report, and will testify to the same.

11 **3. Oracle's Performance Experts Applied the Principles and** 12 **Methods Reliably to the Facts of the Case**

13 The principles and methods of performance benchmark analysis were applied reliably to
14 the facts of this case. The engineers repeated their experiments multiple times and performed the
15 experiments on multiple devices. (*See* Poore Report ¶ 25; Landau Report ¶ 31.) Each engineer
16 provided detailed records of what he did and how he did it. (*See, e.g.,* Vandette Report ¶¶ 26-39;
17 Poore Report ¶¶ 15-40; Landau Report ¶¶ 25-36.) Prof. Mitchell's report shows that "Google's
18 own performance benchmarking shows consistent results as the performance benchmarking
19 conducted at [his] request and under [his] direction." (Agrawal Decl. Ex. 2-5 (Mitchell Patent
20 Infringement Report ¶ 92).) Oracle's experts have presented their results to Google—results that
21 are reproducible and follow standard practices in the field. (*See, e.g.,* Poore Report ¶¶ 15-40;
Landau Report ¶¶ 25-36; Vandette Report ¶¶ 26-39.)

22 It bears repeating: Oracle's experts conducted the performance analysis in such way as to
23 "also allow Google to validate these benchmark tests if they choose to." (Vandette Report ¶ 20,
24 21.) Google could have repeated the same experiments to determine whether the results were
25 reproducible and accurate. Google chose not to do so.

26 Oracle's experts were not required to run the alternative tests Google's counsel argues
27 after-the-fact should have been run (but did not run itself) to rule out every conceivable
28

1 performance factor. *Hemmings v. Tidyman's Inc.*, 285 F.3d 1174, 1188 (9th Cir. 2002) (holding
 2 expert testimony admissible even though expert “did not ‘eliminate all of the possible legitimate
 3 nondiscriminatory factors’”). Even if the testing did not cover all possible factors, this is a
 4 question going to the weight of the evidence, not its admissibility. *See id.* (“In other words, in
 5 most cases, objections to the inadequacies of a study are more appropriately considered an
 6 objection going to the weight of the evidence rather than its admissibility.”). Google is
 7 attempting to hold Oracle to a “near-impossible standard” of eliminating each and every
 8 alternative possibility. *See id.* This is legally incorrect.

9 Google claims that the performance reports “are so fraught with errors, assumptions and
 10 an overall lack of detail that, had the reports been submitted for peer review to any reputable
 11 technical journal or academic institution, they would be immediately rejected.” (Google’s MIL
 12 #2 at 2.) Google offers no evidence to support this bold assertion. Nor does Google have a solid
 13 legal basis for it. The one case it cites, *Ellis v. Costco Wholesale Corp.*, No. 07-15838, 2011 U.S.
 14 App. LEXIS 19060 (9th Cir. Sept. 16, 2011), does not address the issue of peer review as a
 15 *Daubert* factor, *id.* at *25-26, and does not even concern the admissibility of expert testimony.
 16 *See id.* at *20-21. As to the issue of peer review, although it is a factor under *Daubert*, it is not
 17 dispositive. *Daubert*, 509 U.S. at 594 (“The fact of publication (or lack thereof) in a peer
 18 reviewed journal thus will be a relevant, though not dispositive, consideration in assessing the
 19 scientific validity of a particular technique or methodology on which an opinion is premised.”).
 20 Google’s failure to submit any evidence (in the form of a declaration from a knowledgeable
 21 person) to suggest that Oracle’s performance tests would have been accepted or rejected by peer
 22 review, or even that software performance testing of this kind is normally submitted to peer-
 23 reviewed journals, leaves Google’s argument wholly without foundation.

24 At trial, Prof. Mitchell and Oracle’s performance experts will testify about why their
 25 conclusions are supported by the performance tests. Oracle will respond briefly here to Google’s
 26 criticisms, in order (Google’s MIL #2 at 4-5):

- 27 • Mr. Vandette did exactly what Google did to measure the performance speedup due to
 28 new technologies in Android (*see, e.g.*, Agrawal Decl. Ex. 2-2). Oracle’s performance
 experts will testify that benchmarks are widely used as proxies to measure the

performance of applications. (See Vandette Report ¶ 12.) Thus, it is inaccurate to say that Mr. Vandette did not test the performance of any actual Android applications. Moreover, Mr. Vandette used hardware that Google used internally to test Android. The nVidia Tegra-2 board and TI Beagleboard are made by the companies that make the CPUs for Android phones. See also *Liquid Dynamics Corp. v. Vaughan Co.*, 449 F.3d 1209, 1221 (Fed. Cir. 2006) (rejecting a challenge to the admissibility of expert opinion on the grounds that errors in modeling parameters rendered the test results inadmissible); see also *id.* at 1220. In *Liquid Dynamics*, the court rejected defendant's argument that computer simulation models were inadmissible because the modeling parameters "did not match the real-world parameters," finding instead that the modeling "based on reliable scientific methodology and subject to cross examination and the proffering of further scientific analysis by [defendant]." *Id.* at 1220, 1221.

- Mr. Poore carefully studied dexdump files from an actual Android device to measure the impact of the '702 and '520 patents. (Poore Report ¶ 17.) Thus, it is inaccurate to say that Mr. Poore did not test the performance of any actual Android applications.
- Mr. Landau modified Android source code in order to test Android's use of the '720 patent. Google's criticism of the Nexus One as a test device is belied by Google's own August 2010 announcement, discussed above, that the Nexus One was a "good choice" for experimenting. (Agrawal Decl. Ex. 2-17.)
- Google's position here on "reasonable" non-infringing substitutes is directly contradicted by Google's damages expert Gregory Leonard. He opined that a non-infringing alternative was simply to not include the accused functionality, thereby validating Oracle's testing methodology.
- It's not clear what "overall system performance" testing Google refers to—the engineers used the same benchmarks that Google uses internally and externally. The engineers' comparisons were apples-to-apples, and therefore methodologically sound. Moreover, it is not more accurate to recognize that the Dalvik VM is used only 1/3 of the time by Android, Mr. Vandette testified. (*Id.* Ex. 2-11 (Vandette Dep. 43:6-44:10 (in reference to Vandette Dep. Ex. 462)).) Notably, Google doesn't explain why the Dalvik 1/3 issue would have *any effect* on the *reliability* of the testing. Indeed, Google touts the performance advantage Dalvik obtains from the infringing JIT on its website, without accounting for any "1/3 of the time" use. (Agrawal Decl. Ex. 2-2.)
- The engineers followed Google's instructions to download the Android source code from the public repository maintained by Google. If the code that Google distributes to its handset maker licensees is different, that is a fact that Google has concealed in discovery. Android's Andy Rubin caused a stir in 2010 when he responded to Apple's Steve Jobs's criticism of alleged Android openness by announcing: "the definition of open: 'mkdir android ; cd android ; repo init -u git://android.git.kernel.org/platform/manifest.git ; repo sync ; make'". The download location Mr. Rubin identified is the same one identified in Google's Android download instructions, and the one the engineers used.
- The engineers stated in their reports and will testify at trial that they followed Google's specific instructions. Mr. Landau was mistaken at his deposition: JDK5 was used for building the code used in his tests, as he personally confirmed when he returned to his office in Israel afterwards. His deposition errata will include this correction.

Disputes about these matters are not properly resolved on a motion *in limine*. Instead, they are matters for the jury to evaluate.

B. Google's Motion *in Limine* is Not an Appropriate Vehicle to Contest the Performance Evidence

Google's criticisms of Oracle's performance evidence go to its weight, not admissibility. As the *Liquid Dynamics* court held, "[t]he identification of such flaws in generally reliable scientific evidence is precisely the role of cross-examination." 449 F.3d at 1221 (quoting *Quiet Tech. DC-8, Inc. v. Hurel-Dubois UK Ltd.*, 326 F.3d 1333, 1345 (11th Cir. 2003)). Google's challenges to the performance reports are inappropriate for a motion *in limine*. Instead, the alleged errors and deficiencies should be met by "competing expert testimony and active cross-examination." *Id.* at 1221; *see also Yu-Santos v. Ford Motor Co.*, No. 1:06-CV-01773-AWI-DLB, 2009 U.S. Dist. LEXIS 41001, at *26 (E.D. Cal. May 13, 2009) ("In most cases, objections to the inadequacies of a study are more appropriately considered objections going to the weight of the evidence rather than their admissibility. If Defendants wish to explore issues that [the expert] did not test for, such as why he did not test the actual seat belt components, these issues can be covered by cross-examination.") (internal citations omitted); *Hemmings*, 285 F.3d at 1188 ("[O]bjections to the inadequacies of a study are more appropriately considered an objection going to the weight of the evidence rather than its admissibility."). Google's attorney-argument-criticisms usurp the role of the jury in determining the weight and persuasiveness of expert testimony. *Yu-Santos*, 2009 U.S. Dist. LEXIS 41001, at *25 ("Analysis of the credibility and weight of the experts' conclusions should be reserved for the trier of fact."). Evidence cannot be excluded simply because Google's counsel asserts it is flawed or lacking in some regard. The performance reports satisfy the evidentiary requirements; any alleged flaw or defect in the reports must be evaluated by the jury. *See id.*

II. THE PERFORMANCE EVIDENCE HAS SIGNIFICANT PROBATIVE VALUE ON THE QUESTION OF LIABILITY

Google asserts, without any evidence or even explanatory argument, that "evidence regarding the purported performance impact of the asserted patents is potentially probative of only damages theories." (Google MIL #2 at 5-6.) Google is wrong. Oracle's performance tests have significant probative value on the question of liability:

- 1 • The performance tests are probative of liability and willful infringement because they show Google's motivation for including Oracle's patented technologies in Android.
- 2 • The performance tests are probative of direct infringement because they show that the accused code does run on Android devices. Indeed, these tests demonstrate that the accused functionality is executed on Android devices and can be disabled. (*See, e.g.,* Vandette Report ¶¶ 27-28.)
- 3 • The performance tests are probative of direct and indirect infringement because they show that the use of the infringing functionality occurs as a result of following the instructions Google provides. (*See id.* ¶ 22.)
- 4 • The performance tests are probative of indirect infringement because they show that third-party device manufacturers are unlikely to make modifications to the Android source code that Google provides to them because of the performance consequences.

5 Google also argues that the performance analysis would unfairly prejudice Google.

6 Though this evidence may be damaging to Google's case, the resulting prejudicial effect is hardly
 7 unfair. "That evidence may decimate an opponent's case is no ground for its exclusion under
 8 403. The rule excludes only evidence where the prejudice is 'unfair'—that is, based on
 9 something other than its persuasive weight." *United States v. Cruz-Garcia*, 344 F.3d 951, 956
 10 (9th Cir. 2003). There is nothing "inflated" about the importance of Oracle's patents to the
 11 success of Android as demonstrated by the performance testing. If anything else, it is Google's
 12 failure to perform testing of its own that may cause the jury to credit Oracle's performance
 13 testing. But that is not unfair—and any alleged "inflation" of that importance can be addressed
 14 through Google's cross examination.

15 **III. THE PERFORMANCE EVIDENCE HAS SIGNIFICANT PROBATIVE 16 VALUE ON THE QUESTION OF DAMAGES**

17 The performance testing evidence has significant probative value on the question of
 18 damages. The evidence demonstrates a marked impact on Android's performance when the
 19 accused functionality is disabled. (Agrawal Decl. Ex. 2-5 (Mitchell Patent Infringement Report
 20 ¶¶ 41, 48, 53, 61).) Google admits internally that Android's performance is crucial to its success.
 21 (*See, e.g.,* Agrawal Decl. Ex. 2-3, GOOGLE-04-00055098); Ex. 2-4 (Morrill Dep. 168:22-
 22 169:23.)

23 The benchmark tests are particularly relevant to the damages apportionment analysis,
 24 which the Court required Prof. Cockburn to estimate in its *Daubert* Order. Prof. Cockburn
 25

1 considers the performance of the modified phones, along with the evidence of the importance of
 2 those performance attributes from the conjoint analysis, to calculate the reduced market share that
 3 a phone without the patented functionality would command. He used the information from the
 4 Linpack benchmarking in the econometrics analysis to calculate customers' willingness to pay for
 5 the patented features. Both of these analyses will help the jury understand the value of the
 6 patents-in-suit and enable them to determine damages specific to the infringed patents.

7 Google claims that the performance evidence will "be used in prejudicial ways." (Google
 8 MIL #2 at 6.) But there is no danger of *unfair* prejudice. As discussed above, unfair prejudice
 9 requires more than just the fact that evidence is unfavorable; it requires that prejudice be based on
 10 something other than the persuasive weight of the evidence. *Cruz-Garcia*, 344 F.3d at 956.
 11 Google's arguments do not identify any such prejudice. It is for the jury to decide how much
 12 weight to give to the performance evidence. Google will have the opportunity to contest this
 13 evidence at trial and cannot shirk that duty via a motion *in limine*.

14 IV. CONCLUSION

15 For the foregoing reasons, Oracle respectfully asks that the Court deny Google's motion
 16 *in limine* to exclude performance benefits Android gains from use of the claimed invention of the
 17 patents-in-suit.

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